
5 Fig. 1

- | | | |
|-----|---|-------------------|
| | Reference signal | Modulated carrier |
| 3: | Phase comparator | |
| 4: | Charge pump | |
| 5: | Loop filter | |
| 10 | 7: Modulation data generator | |
| | 8: Pre-distortion filter | |
| | Frequency data | |
| 10: | $\Sigma \Delta$ modulator | |
| 15: | Calibration data generator | |
| 15 | 18: Demodulator | |
| | 31: Memory | |
| | 32: Error detection means | |
| | 33: Frequency characteristic correction means | |
| | 40: Selector | |
| 20 | 42: Modulating signal generator | |

Fig. 2

- | | |
|---------------------|---|
| Without modulation | 42: Modulating signal generator |
| Frequency data (f1) | |
| 25 | |
| Fig. 3 | |
| Charge pump | Modulated carrier |
| 18: Demodulator | |
| 31: Memory | |
| 30 | 32: Error detection means |
| | 33: Frequency characteristic correction means |
| | 15: |

Low

High

Fig. 4

- | | | |
|----|---|-------------------|
| 5 | Reference signal | Modulated carrier |
| | 1: Voltage-controlled oscillator | |
| | 2: Frequency divider | |
| | 3: Phase comparator | |
| | 4: Charge pump | |
| 10 | 5: Loop filter | |
| | 7: Modulation data generator | |
| | 8: Pre-distortion filter | |
| | Frequency data | |
| | 10: $\Sigma \Delta$ modulator | |
| 15 | 12: Register | |
| | 13: Comparison means | |
| | 14: Filter characteristic control means | |
| | 15: Calibration data generator | |
| | Control signal | |
| 20 | 24: Lookup table | |
| | 27: Correction means | |

Fig. 5

Gain [dB]

- | | |
|----|---|
| 25 | A1: Frequency characteristic of PLL (with variation) |
| | B1: Frequency characteristic of pre-distortion filter |
| | C1: Frequency characteristic obtained after synthesis |
| | Frequency [Hz] |

30 Fig. 6

Gain [dB]

Frequency [Hz]

Fig. 7

Gain [dB]

Direction of correction

5 B2: Frequency characteristic of pre-distortion filter obtained after correction

C2: Frequency characteristic obtained after synthesis

Frequency [Hz]

Fig. 8

10 Modulating signal component (fCAL)

Modulating signal component (fBW)

Amplitude (H)

Time (t)

15 Fig. 9

Reference signal

Modulated carrier

1: Voltage-controlled oscillator

2: Frequency divider

3: Phase comparator

20 4: Charge pump

5: Loop filter

7: Modulation data generator

8: Pre-distortion filter

Frequency data

25 10: $\Sigma \Delta$ modulator

12: Register

13: Comparison means

14: Filter characteristic control means

15: Calibration data generator

30 Control signal

17: Correction means

20: Charge pump current control means

Fig. 10

- Gain [dB]
 Direction of correction
 5 A2: Frequency characteristic of PLL obtained after correction
 Frequency [Hz]

Fig. 11

- | | |
|------------------|-------------------|
| Reference signal | Modulated carrier |
|------------------|-------------------|
- 10 1: Voltage-controlled oscillator
 2: Frequency divider
 3: Phase comparator
 4: Charge pump
 5: Loop filter
 15 7: Modulation data generator
 8: Pre-distortion filter
 Frequency data
 10: $\Sigma \Delta$ modulator
 12: Register
 20 13: Comparison means
 14: Filter characteristic control means
 15: Calibration data generator
 Control signal
 27: Correction means
 25 Demodulator

Fig. 12

- | | |
|------------------|-------------------|
| Reference signal | Modulated carrier |
|------------------|-------------------|
- 30 1: Voltage-controlled oscillator
 2: Frequency divider
 3: Phase comparator
 4: Charge pump

- 5: Loop filter
 7: Modulation data generator
 8: Pre-distortion filter
 Frequency data
 5 10: $\Sigma \Delta$ modulator
 12: Register
 13: Comparison means
 14: Filter characteristic control means
 15: Calibration data generator
 10 Control signal
 19: Low-pass filter
 27: Correction means

Fig. 13

- 15 Gain [dB]
 A3: Frequency characteristic of PLL (large attenuation in an out-of-band high-frequency range)
 C3: Frequency characteristic obtained after synthesis
 Frequency [Hz]

20

Fig. 14

- | | |
|----------------------------------|--------------------------|
| Fixed frequency reference signal | Modulated carrier signal |
|----------------------------------|--------------------------|
- 36: Phase comparator
 25 40: Loop filter
 30: Multilevel frequency divider
 Digital modulation data
 46: Digital compensation filter
 56: $\Sigma \Delta$ modulator
 30 Carrier signal

Fig. 15

Gain [dB]

A: Frequency characteristic of PLL

B: Frequency characteristic of digital compensation filter

C: Frequency characteristic obtained after synthesis

5 Frequency [Hz]

Fig. 16

Gain [dB]

Frequency [Hz]

10

図 1

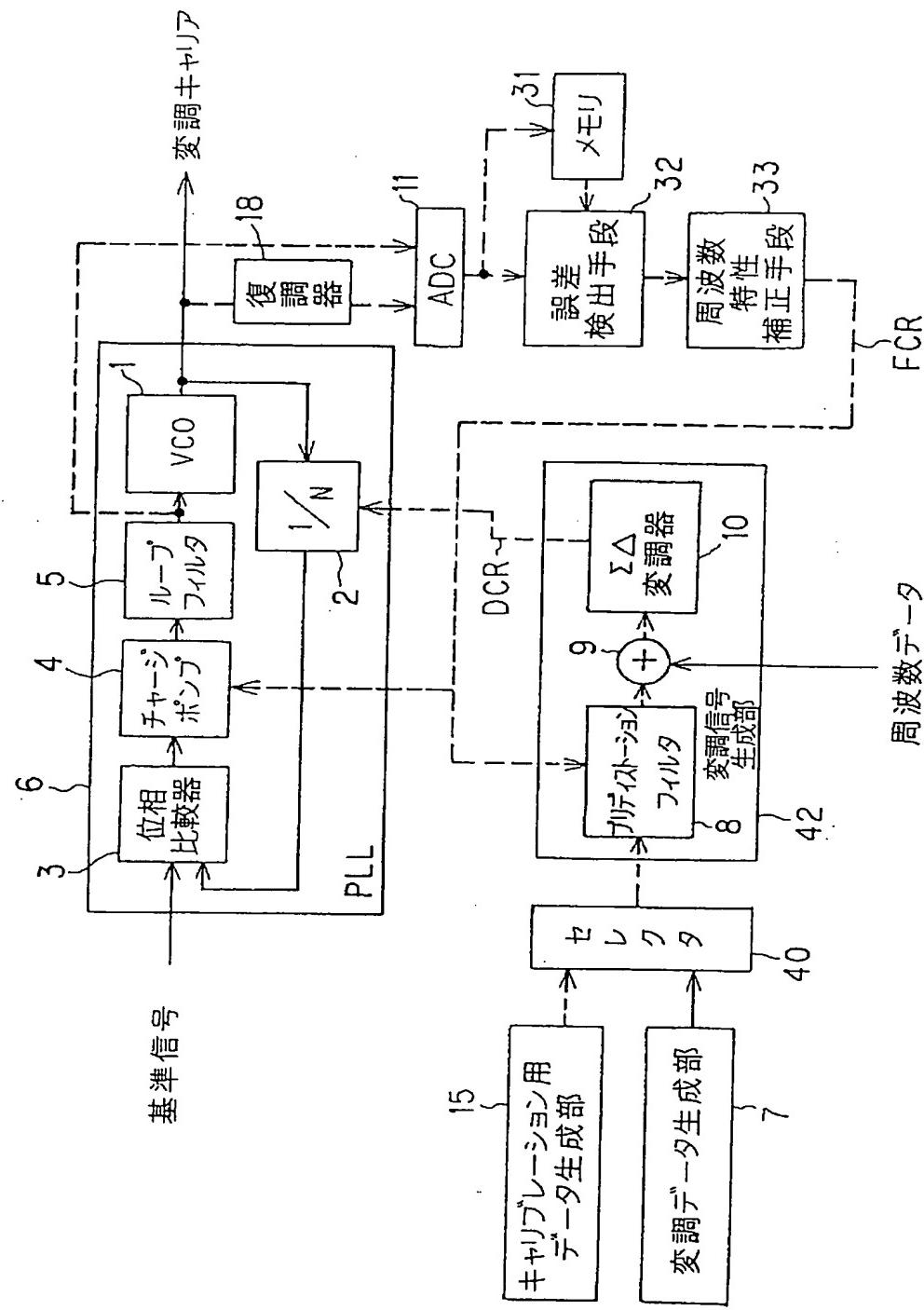


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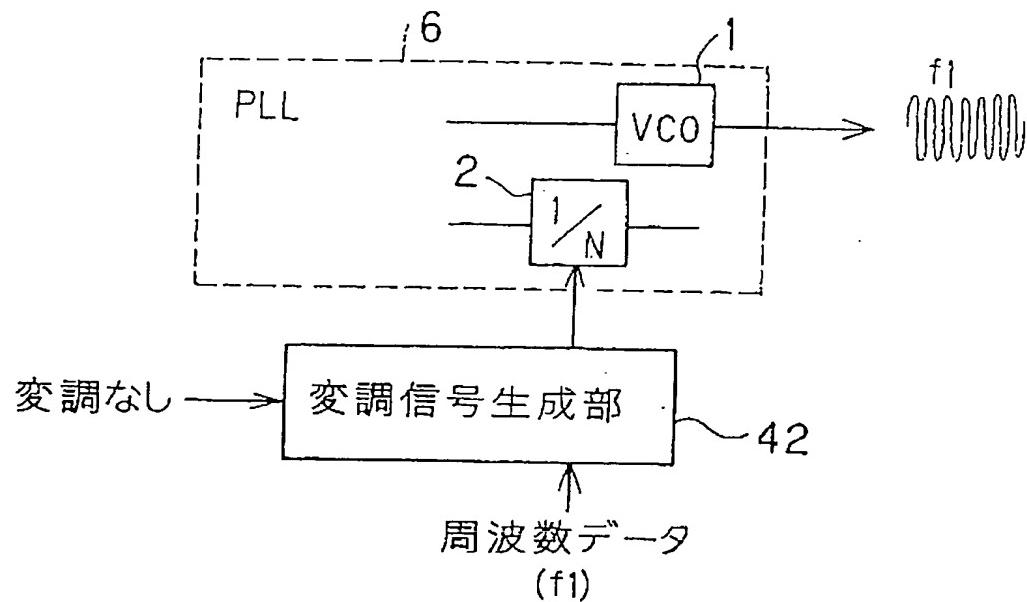


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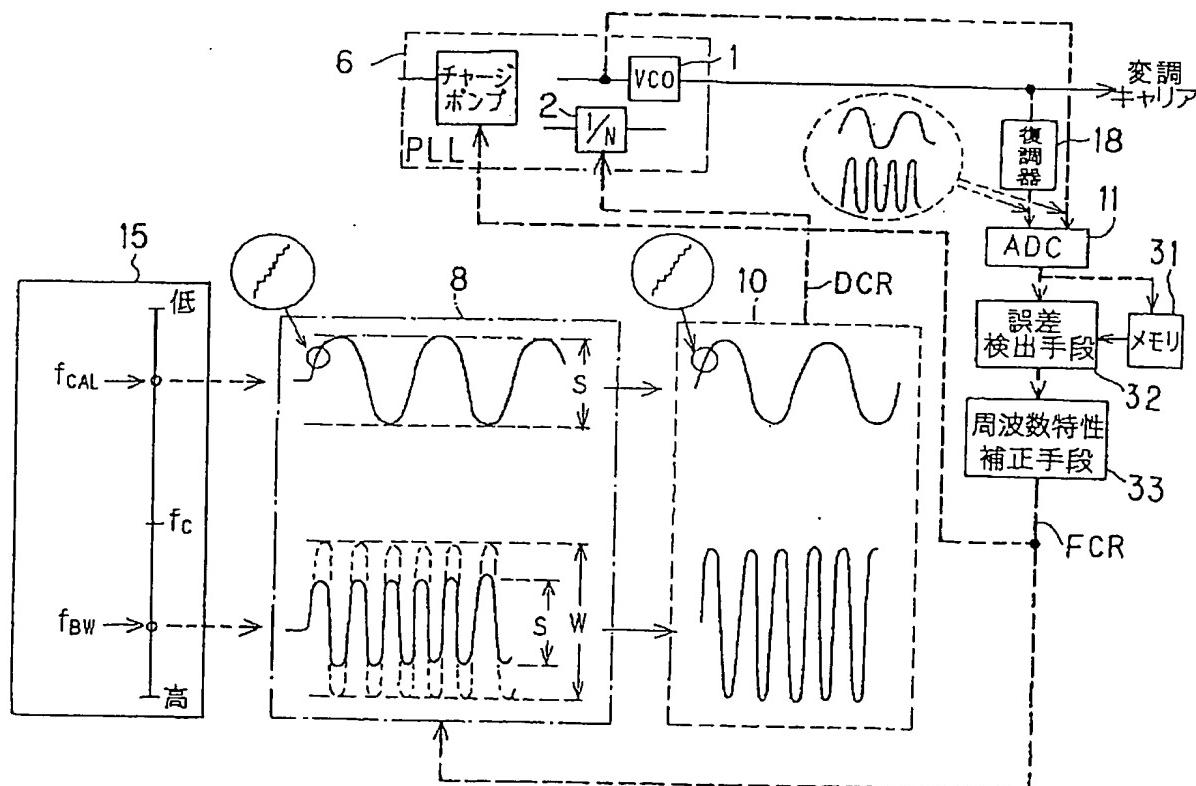


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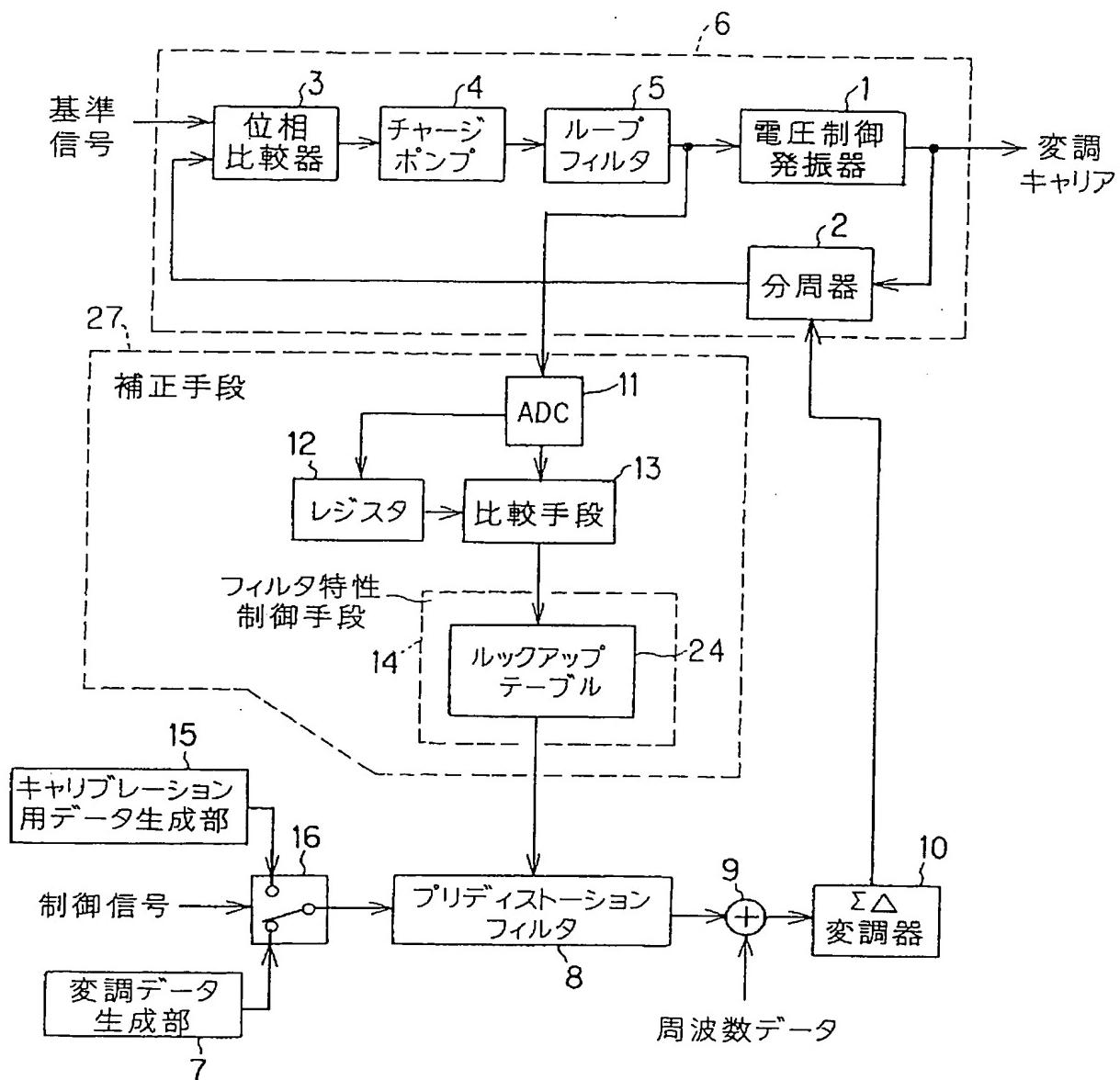


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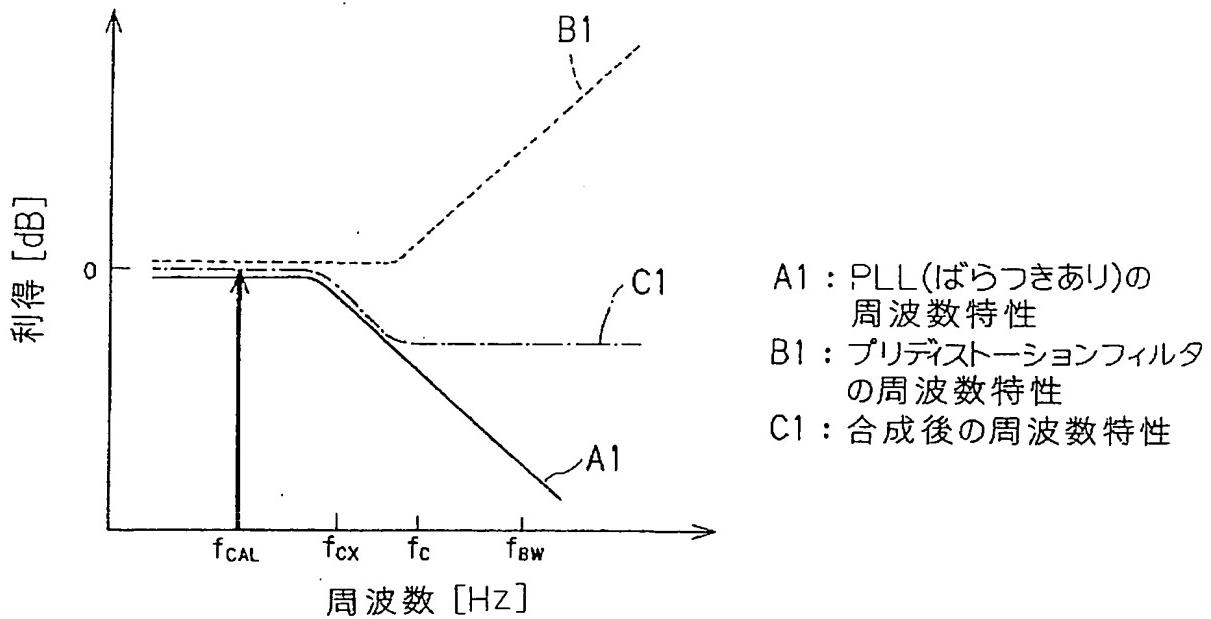


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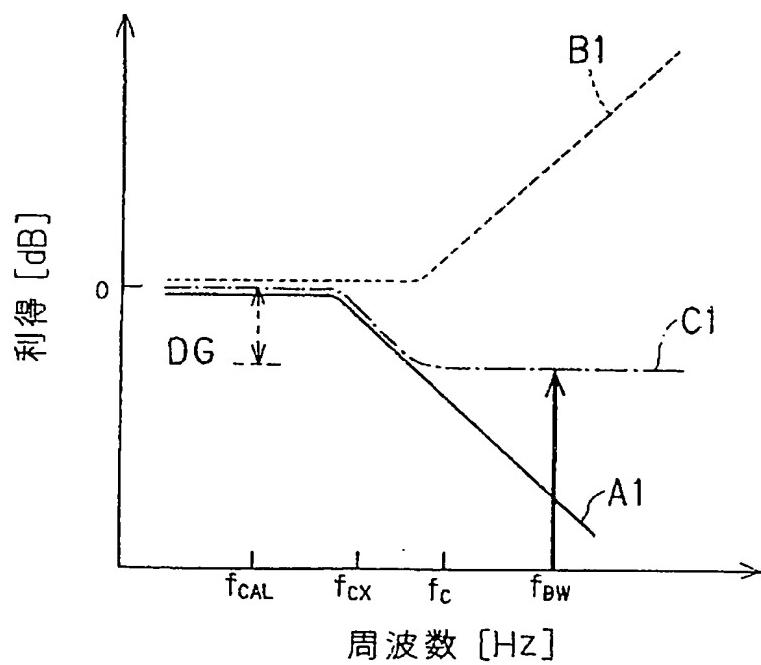
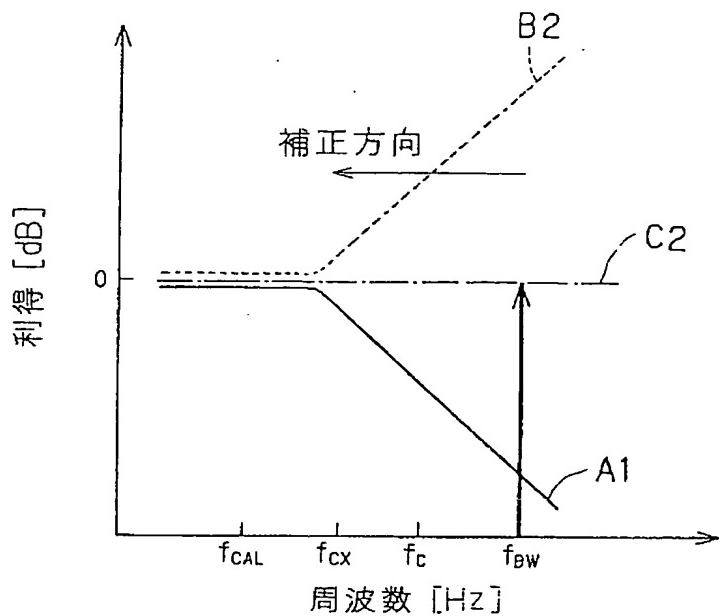


図 7



B2 : 補正後のプリディストーションフィルタの周波数特性

C2 : 合成後の周波数特性

図 8

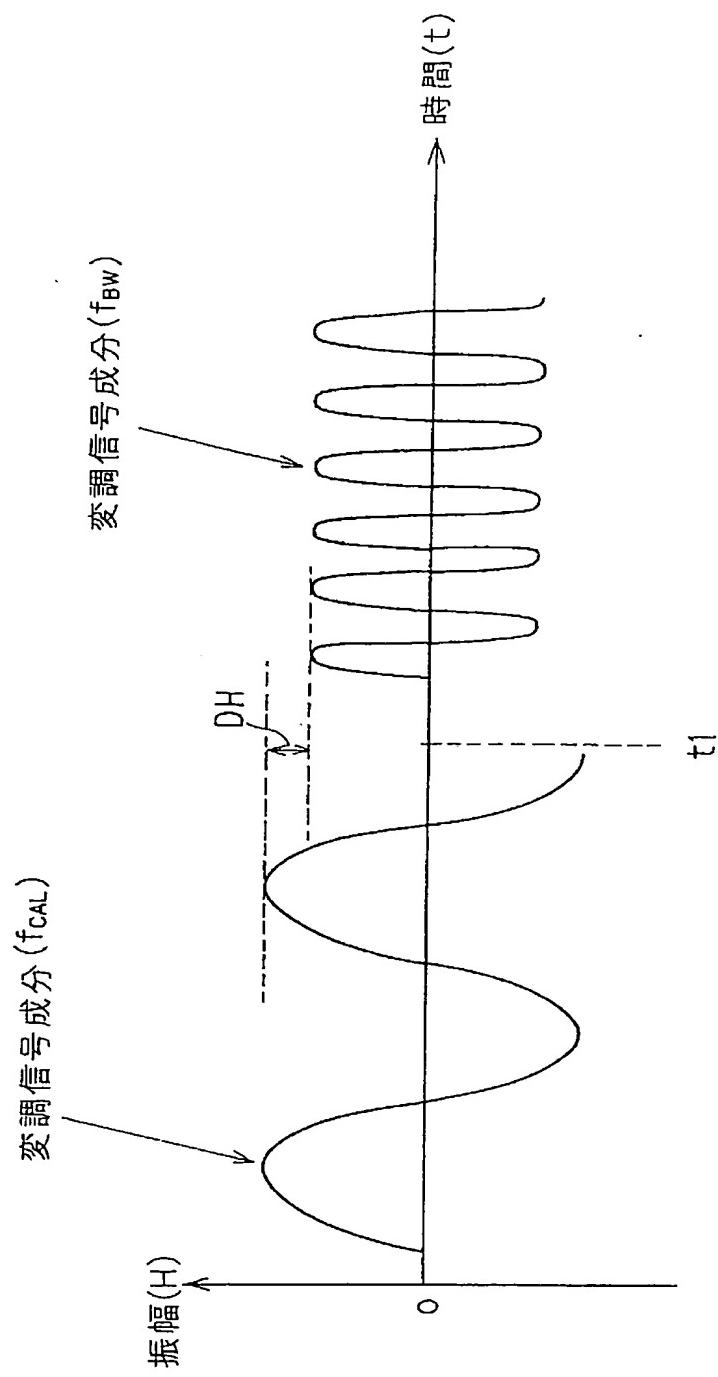


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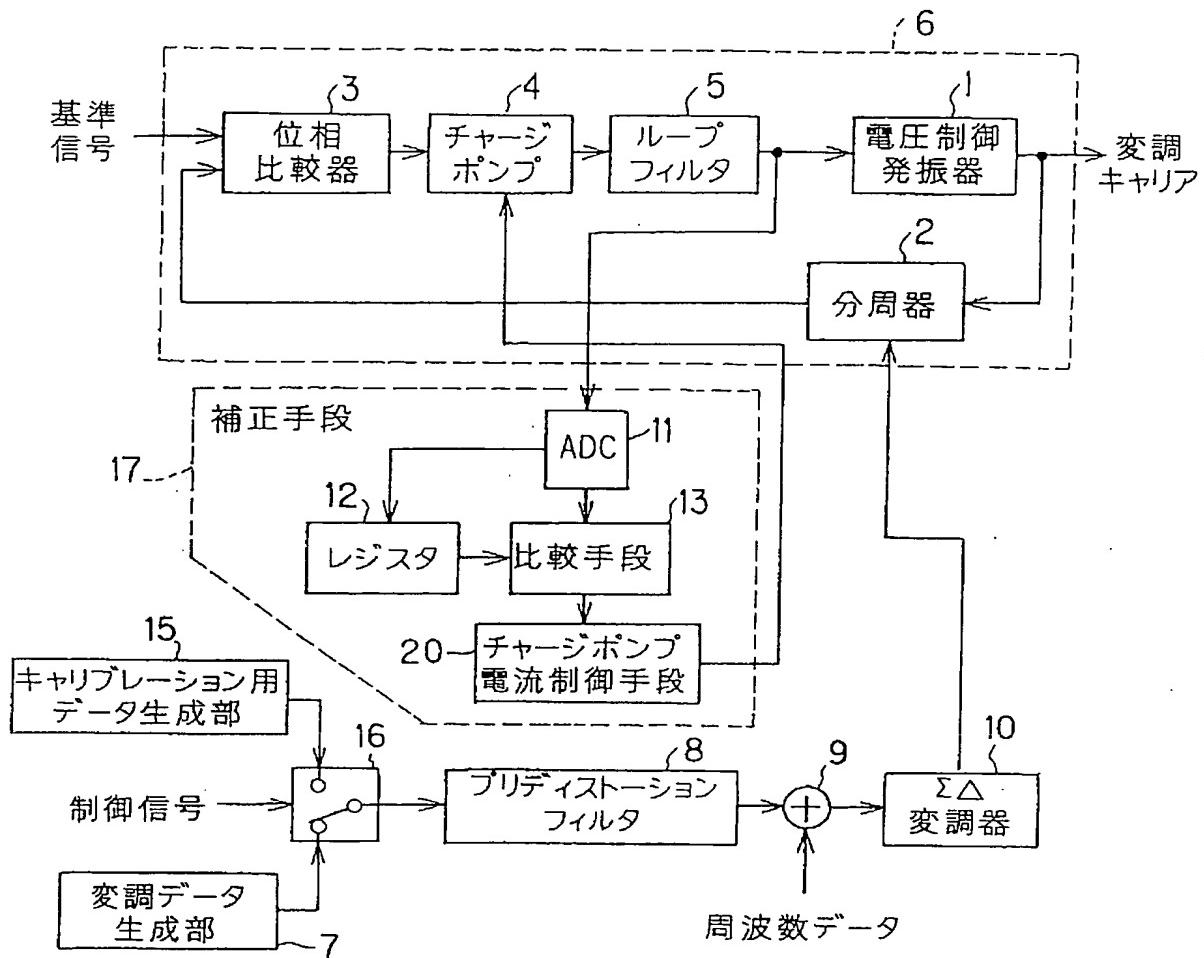


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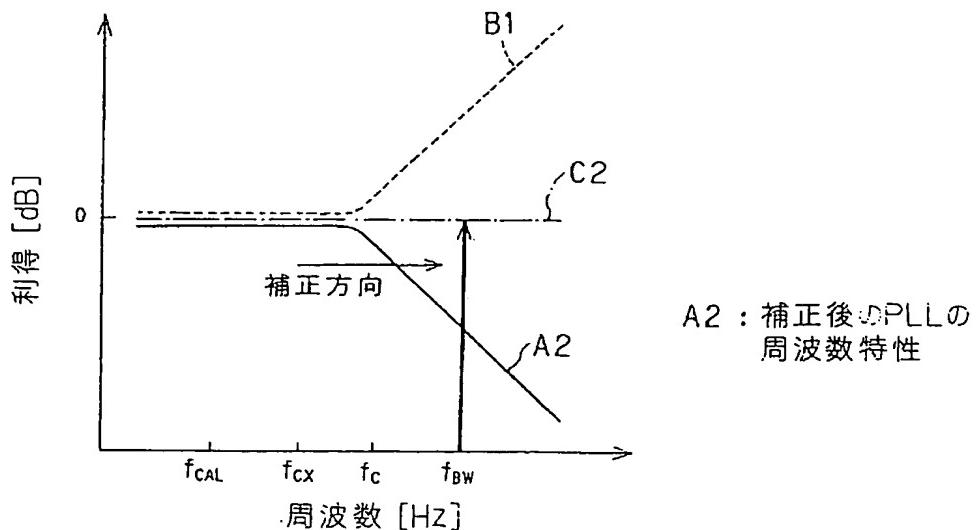


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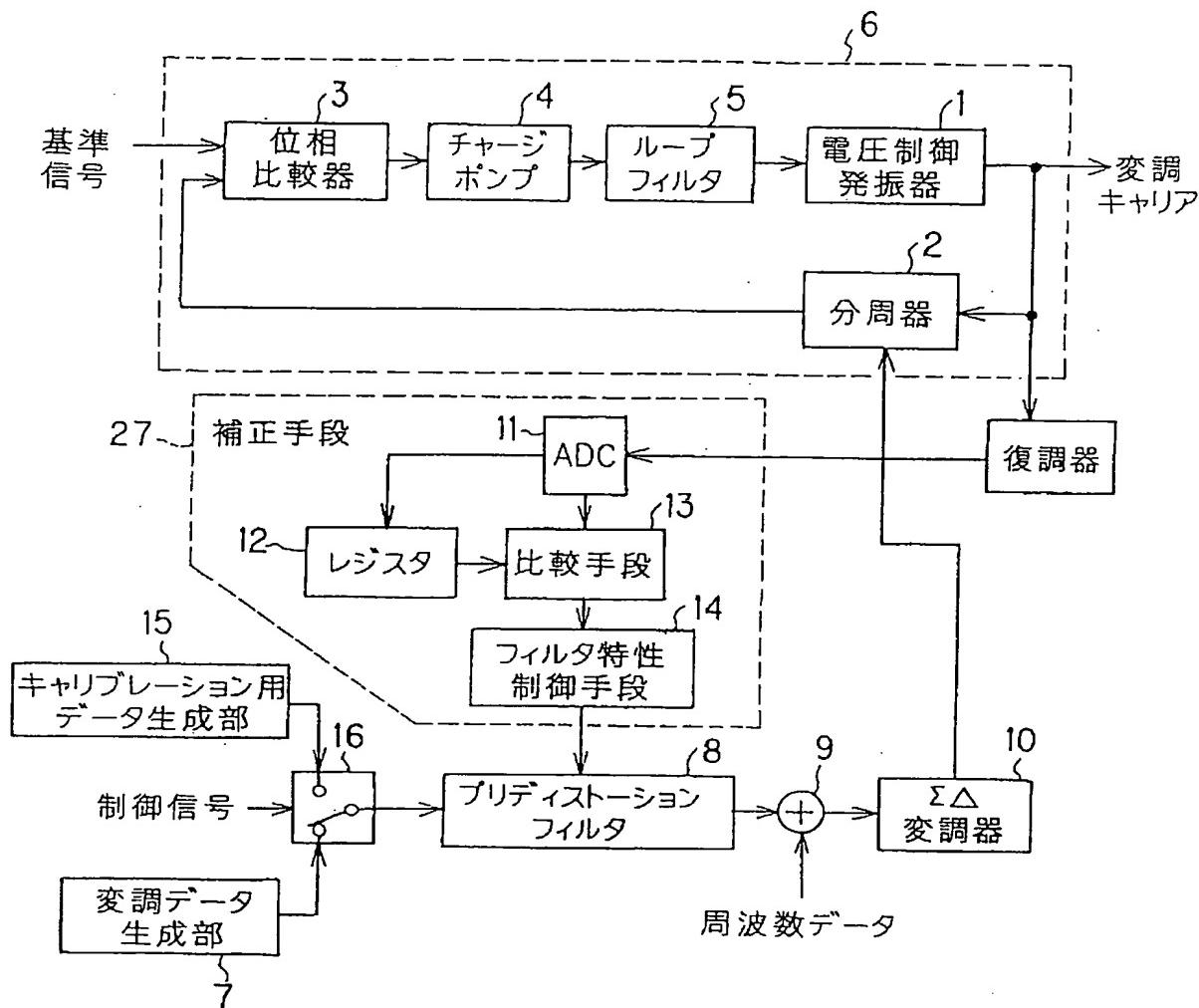


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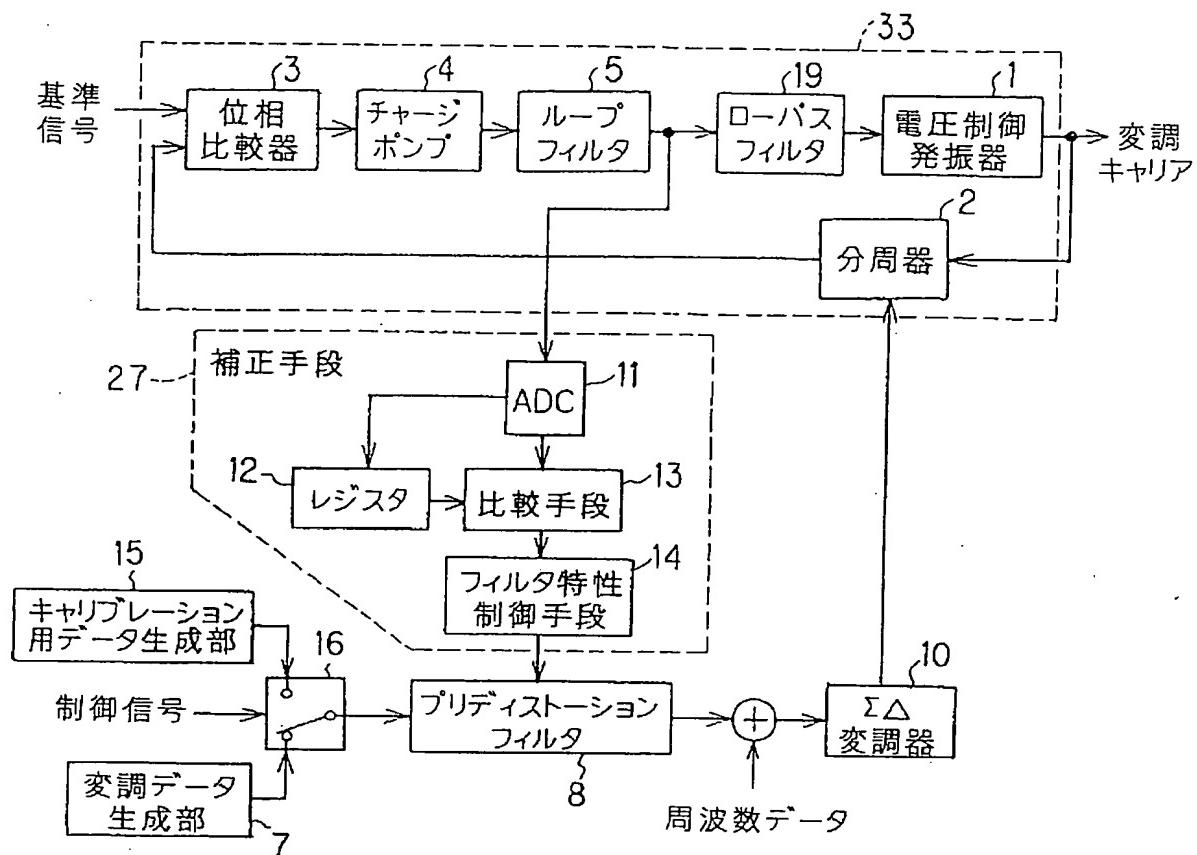


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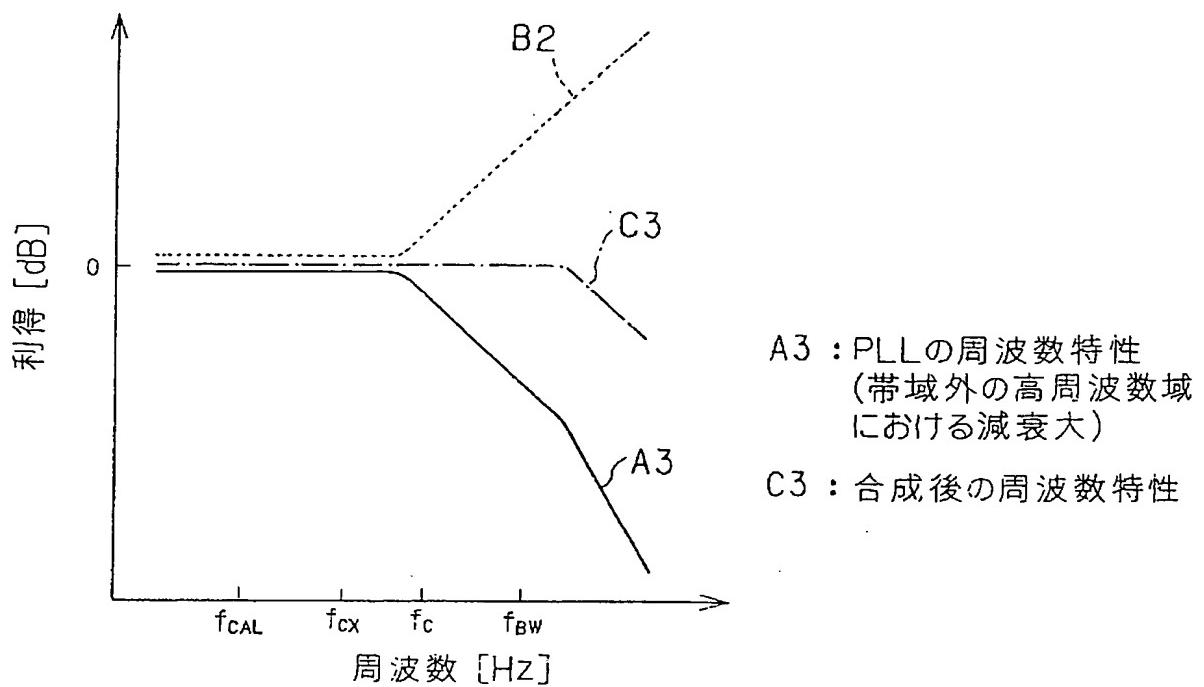


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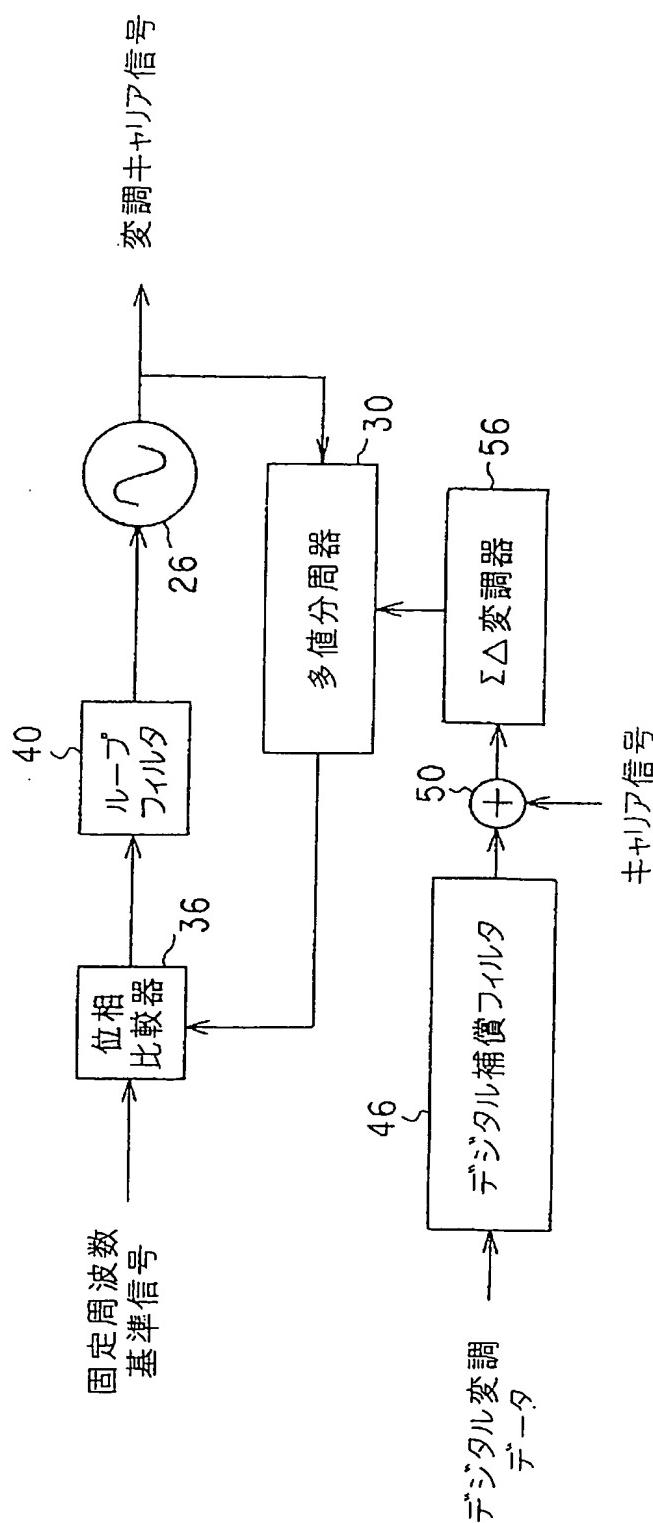


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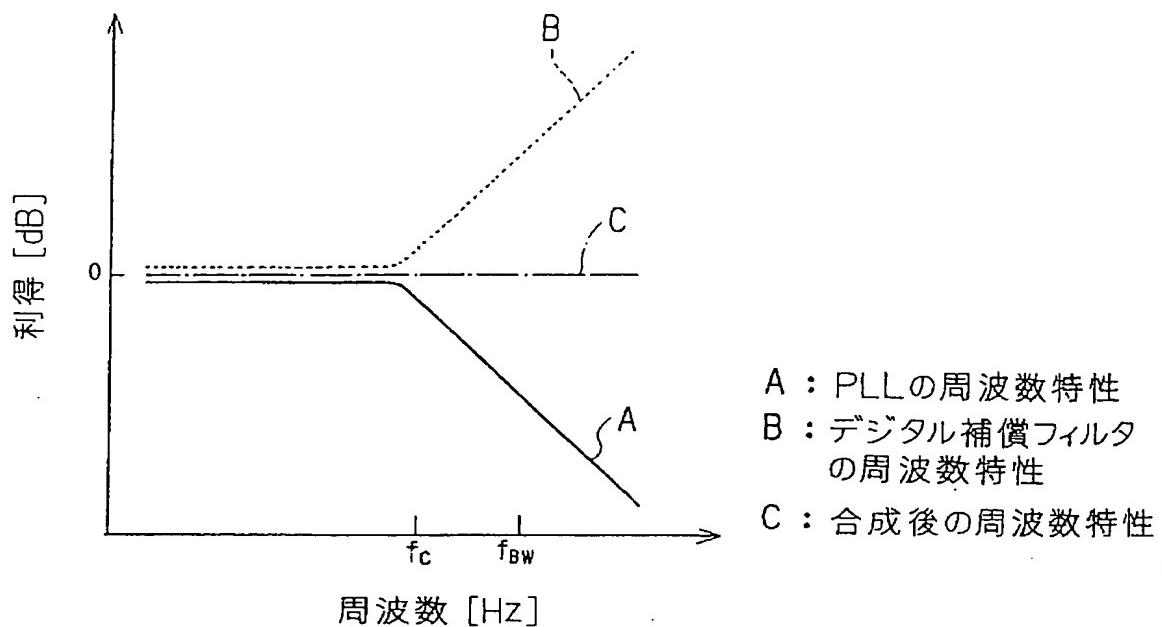


図 1 6

